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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,580	12/17/2001	Albert C. Jerng	267452000800	2692

20872 7590 05/03/2005  
MORRISON & FOERSTER LLP  
425 MARKET STREET  
SAN FRANCISCO, CA 94105-2482

EXAMINER
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JAMAL, ALEXANDER

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/023,580

**Applicant(s)**

JERNG, ALBERT C.

**Examiner**

Alexander Jamal

**Art Unit**

2643

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12-17-2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12-17-01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-3,6-10,12-18,20-35** rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (specification pages 2-3, Fig. 2), and further in view of Piro et al. (6871059).

As per **claim 1**, applicant's admitted prior art discloses an RF receiver front end comprising an active single ended to differential circuit (Fig. 2) coupled to a first and second transistors configured in a differential voltage to current configuration.

Applicant's admitted prior art further specifies that the active single ended to differential circuit may cause extra noise in the receiver (specification page 3 paragraph 10).

However, applicant's admitted prior art does not disclose a passive balun used in place of the active balun.

Piro teaches a passive balun used in an RF receiver frontend. The circuit comprises single ended to differential transformer TX1 (Fig. 6). The circuit comprises tuning circuit 512 (Fig. 5) that may be implemented with capacitor C5 (Fig. 6). The circuit further comprises capacitor C6 coupled to the center tap and ground. The circuit further comprises tuning circuits 512 (Fig. 5) that may be formed by a shunt capacitor

been obvious to one of ordinary skill in the art at the time of this application to utilize a passive balun in place of an active one for the purpose of reducing system noise and power draw. Furthermore, It would have been obvious to one of ordinary skill in the art at the time of this application to utilize the differential output mixer of applicant's disclosed prior art (Fig. 2) for the purpose of superior common mode noise rejection inherent to differential signaling. Furthermore, It would have been obvious to one of ordinary skill in the art at the time of this application that the tuning circuits 512 of Piro (Fig. 5) could be implemented with any combination of parallel or series resistors or capacitors in order to tune the circuit (and remain integrated) for the advantage of allowing a design choice in picking cheaper or more readily available parts out in the design.

As per **claim 9**, claim rejected for the same reasons as the claim 1 rejection as the circuitry of the claim 1 rejection will perform the balun-converting, tuning (resonance forming, gain stabilizing, impedance matching), and balun grounding of claim 9.

As per **claim 17**, claim rejected for the same reasons as claim 19 rejection.

As per **claims 28**, claim rejected as a method performed by the circuit of the claim 17 rejection.

As per **claim 2**, the balun circuit if coupled to a singled ended LNA.

As per **claim 3**, the LNA is coupled to single ended RF antenna (applicant's admitted prior art Fig. 1).

As per **claims 6,7,10,18,29**, Piro discloses a bias (ground) coupled to the first coil of transformer TX1 (Fig. 6) that will be used by the LNA.

As per **claims 8,26,27**, applicant's admitted prior art (Fig. 2) discloses that the differential output mixer comprises a 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> transistor used to produce the differential IF signal (transistor 160,162,164,166).

As per **claims 12-16,20-25,30-35**, claims rejected for same reasons as claim 1,9,17,28 rejections.

3. **Claims 4,5,11,19** rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (specification pages 2-3, Fig. 2) and Piro et al. (6871059) as applied to claims 1,9,17,28, and further in view of Plowdrey et al. (5742897).

As per **claims 4,5,11,19**, applicant's admitted prior art in view of Piro disclose applicant's claims 1,9,17,28, but they do not specify that the voltage to current converter stage is biased via the center tap of the second inductor.

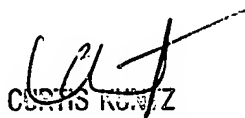
Plowdrey teaches an RF receiver comprising a transformer coupled to a mixing stage. Plowdrey discloses (Fig. 2) that the bias for the mixing circuits is provided via the center tap of the transformer. It would have been obvious to one of ordinary skill in the art at the time of this application that the center tap of a preceding transformer could be used to bias the mixer for the advantage that the supply voltage will have the additional signal filtering provided by the inductor and capacitors before it reaches the mixing stage circuitry.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 571-272-7498. The examiner can normally be reached on M-F 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 571-272-7499. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9315 for After Final communications.

AJ  
April 28, 2005

  
CURTIS KUNTZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600